

PREALGEBRA – THE OCEANS

Choose the letter of the correct answer. In all cases, E. NOTA means “none of these answers”.

Bob is a math loving, rainbow fish, adventuring the underwater world of the Atlantic Ocean.

1. Bob and his sea creature friends are swimming in a warm current. There are $(4 \cdot 3 + 2^3) - 7 \cdot 0 + 3$ fish in the group. How many fish are there?

- A. 21 B. 23 C. 30 D. 228 E. NOTA

2. Bob’s lazy friend Zec, the longneck eel, got left behind. While Bob swims at a rate of 5 inches per second, Zec can only swim 3 inches per second. If Zec and Bob both swim for 3 seconds, what distance does Zec need to swim to catch up?

- A. 15 inches B. 9 inches C. 6 inches D. 5 inches E. NOTA

3. One night, a scary, white shark with pointy teeth named Ginger became hungry. While searching for food, she spotted Bob playing in a bush of seaweed. Ginger is located at the point $(-3, 1)$ while Bob is at the point $(4, 2)$. What is the slope between Ginger and the Bob?

- A. 7 B. $\frac{1}{7}$ C. $-\frac{1}{6}$ D. -7 E. NOTA

4. Bob has been swimming in the forbidden zone and is lost. In order to go back home, he has to ask Mahi-mahi Miranda for directions. However, being the mean fish she is, she will not tell him unless he solves for how many seashells she took home. Solve for s : $5(s-1) - 7 = 4(s+8)$, to see how many seashells she took home.

- A. 16 B. 20 C. 44 D. 72 E. NOTA

5. Safely arriving at his house, Bob notices his family arguing. His mother Linda claims that $\sqrt{65}$ is the biggest number while his father, Joseph declares that 4^2 is the biggest. Marshall, Bob’s younger brother, challenges that 8.9 is the biggest but Bob says that (3×9) is the biggest. Who is correct?

- A. Joseph B. Linda C. Marshall D. Bob E. NOTA

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6. Doing math makes the brothers hungry so Bob takes three bags of plankton chips from the pantry. He pours the three bags in a large bowl and shares it with Marshall. Bob eats $\frac{1}{2}$ of the chips in the bowl while Marshall only eats $\frac{1}{3}$ of the chips in the bowl. How much more of the chips did Bob eat than Marshall?

- A. $\frac{1}{6}$ B. $\frac{1}{2}$ C. $\frac{5}{6}$ D. 1 E. NOTA

7. Swimming leisurely, Bob looks at the plants and sees the words five hundred seventy-eight ten thousandths. What is this number in numerical form?

- A. 578,000 B. 57,800 C. 0.578000 D. 0.0587 E. NOTA

8. Bumping into Eun, the electric eel, Bob goes on a quest to find treasures buried in the deep abyss. Eun's probability of finding the treasures is 60%. Convert this percentage into a fraction in simplest form.

- A. $\frac{3}{50}$ B. $\frac{4}{7}$ C. $\frac{3}{5}$ D. $\frac{13}{20}$ E. NOTA

9. Searching for hours, Eun and Bob found a treasure chest filled with gold coins. Bob expected to find 4^2 gold coins in the treasure chest, but there are $\frac{4^6}{4^3}$ more coins than Bob expected. How many coins were actually in the treasure chest?

- A. 80 B. 64 C. 32 D. 16 E. NOTA

10. Happily traveling in the water, Bob meets his friends, Jimmy, Nicholas and Joyce, betting on who is right. Curious, Bob decides to see what his friends are up to. Each fish states a property associated with the equation. Find who is (are) right.

Jimmy: $4(x + 4) = 4x + 16$ is the Associative Property

Nicholas: $(2 + 3) + 9 = 2 + (3 + 9)$ is the Distributive Property

Joyce: $y + 9 = 9 + y$ is the Commutative Property

- A. Jimmy B. Joyce C. Nicholas D. None are correct E. NOTA

11. Going toward a supermarket, Bob swims in a perfectly straight line. If the equation of the line is $y = 3x - 7$, find the x-intercept.

- A. -7 B. $-\frac{3}{7}$ C. $\frac{3}{7}$ D. 3 E. NOTA

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12. Solve for x. $\frac{-3}{4}x + 5 \leq -7$

- A. $x \leq -16$ B. $x \geq -16$ C. $x \leq 16$ D. $x \geq 16$ E. NOTA

13. At the supermarket, Bob buys groceries for his mom. Inspecting his receipt, he notices that his subtotal (not including tax) is \$92.50. If the sales tax rate is 8%, then what is the cost of his groceries including sales tax?

- A. \$7.40 B. \$85.10 C. \$99.90 D. \$166.50 E. NOTA

14. Find the y-intercept of the line whose equation is $y - 4 = 3x + b$, given that the line passes through the point (1,5).

- A. -18 B. -4 C. -2 D. 1 E. NOTA

15. Bob finds two numbers Y and Z. The sum of the two numbers is 28. When Z is subtracted from Y, the difference is 4. Solve for these two numbers and express the numbers in quotient form where the number with the greater value is the numerator.

- A. $\frac{3}{2}$ B. $\frac{4}{3}$ C. $\frac{3}{4}$ D. $\frac{2}{3}$ E. NOTA

16. Bob spots a school of anchovies dancing about delightfully. One anchovy swims out to Bob and introduces herself as Allison. She crosses her arms and complains about how her anchovy friends are not dancing in perfect unison. She says, “The probability of them dancing in perfect unison is 0.0000010035”. Express this number in scientific notation.

- A. 1.0035×10^7 B. 1.0035×10^6 C. 1.0035×10^{-6}
D. 1.0035×10^{-7} E. NOTA

17. Allison the Anchovy warns Bob about the angry cod, Chase, who does not let anyone pass him by unless one gets the “password” right. It is apparently made up of Chase’s favorite four letters of the alphabet, A, C, F, and N. How many different passwords can be made from the four letters if repetition is allowed?

- A. 256 B. 24 C. 16 D. 9 E. NOTA

18. Bob was resting when he heard Niral the Narwhal sitting on a rock murmuring about his tusk increasing in size each day. Niral said that the first time he measured the length of his tusk, it was $\frac{5\frac{1}{4}}{6\frac{1}{6}}$ inches, but when he measured it again that morning, it was $\frac{6\frac{1}{2}}{4\frac{1}{3}}$ inches. Find the difference in inches.

- A. 0 B. $\frac{25}{42}$ C. $\frac{7}{3}$ D. 6 E. NOTA

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19. A huge fish net appears out of nowhere and nearly traps Bob. Unfortunately 16 blue fish (a blue fish is any part blue), 16 red fish (a red fish is any part red), 27 yellow fish (a yellow fish is any part yellow), 4 fish that are both blue and red, 6 fish that are both red and yellow, 7 fish that are both yellow and blue, and 2 fish that are blue, red, and yellow are caught in the net. How many total fish are caught in the net?

- A. 8 B. 36 C. 44 D. 78 E. NOTA

Use the following information for questions 20 and 21.

Bob overhears some fish talking about Bailey the Blowfish, who is known for puffing up uncontrollably. Right then, out of the corner of his eye, Bob catches a glimpse of a perfectly circular figure floating around, then hears some fish whisper to each other, “Oh no! Poor Bailey...”

20. If the circumference of her circular body is 16π , what is the area? (Let us disregard the fact that Bailey’s body would actually be a sphere.)

- A. 64π B. 32π C. 16π D. 4π E. NOTA

21. If the original circumference of her body before she puffs up is 4π , then by what percent does the radius of her body increase from before her body expansion to after the expansion?

- A. 400% B. 200% C. 25% D. 4% E. NOTA

22. Four little shrimp are arguing about something.

A=Ismael: There are 5 major oceans

B=Jimmy: Approximately 90% of the Earth’s surface is covered by ocean

C=Jeffery: Oceans look blue primarily because of the reflection of the sky

D=Nick: The Pacific Ocean separates Asia and Australia from the Americas

If A=1.41, B=3.29, C=2.73, and D=4.58, find the product of the true statements rounded to the nearest hundredth.

- A. 58 B. 21.25 C. 15.07 D. 6.46 E. NOTA

23. “I am going to eat you if you cannot answer my question!” says Kelsey the Killer Whale. She tells Bob that she is thinking of two numbers. Let p = the smallest prime number and let n = the largest of the five consecutive odd integers that add up to 175. What is the average of n and p ?

- A. 21 B. 20.5 C. 16.5 D. 16 E. NOTA

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24. Joyce the Jellyfish is traveling slowly along, getting her work-out for the day. Upon starting up a conversation with her, Bob finds out that she travels at a rate of x miles every day, where x is represented by this equation, $5.7 + (1.3 \cdot 5x) = 20$. Find x .

- A. 4 B. 2.4 C. 2.2 D. 0.22 E. NOTA

25. Nitasha is a special little starfish. Instead of being shaped like a normal star, she is shaped like the Star of David. Each of the sides of the two big regular triangles that make up her shape has a length of 4 inches. Find the area of one of the two big triangles.



- A. 16 B. $8\sqrt{3}$ C. 8 D. $4\sqrt{3}$ E. NOTA

Tired Bob was resting on a blue rock when he suddenly felt it move under him. It was only then that Bob realized that the blue rock was actually Wayne the Blue Whale. Unfortunately for Bob, Wayne started to swim slowly towards the surface of the ocean and finally sprouted water from the blowhole, causing Bob to be thrown into the air. To add to his terrible misfortune, he was quickly snatched up by a pelican and was now flying.

For questions 26-28, use this information.

Right when Bob was starting to think that he would never be able to see fish of any sort ever again, the pelican flies near the window of a building where Bob skillfully spots Annie the Angelfish. She seems to be swimming happily in a fish tank shaped like a rectangular prism with a height of 15 inches, width of 12 inches, and length of 11 inches.

26. What is the volume of the fish tank in cubic inches?

- A. 1980 B. 960 C. 954 D. 38 E. NOTA

27. What is the surface area of the fish tank in inches?

- A. 1980 B. 960 C. 954 D. 38 E. NOTA

28. Annie wanted a larger fish tank and it was replaced with a bigger one where each of the three dimensions was increased by 20%. Here is what you need to do : enlarge each of the three dimensions by 20%, round each number to the nearest whole number, then find the approximate volume of the new fish tank.

- A. 3510 B. 3276 C. 1980 D. 638 E. NOTA

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29. Being the intelligent as well as observant little fish that he is, Bob sees that Danny the Dolphin and Wayne the Whale are playing Slide (Do not fear if you do not know what it is). But instead of increasing their clapping by one each time, they play it differently. This has been the pattern : 1, 2, 6, 15, 31, 56, 92. What should the next number be?

- A. 276 B. 184 C. 141 D. 118 E. NOTA**

30. What is the name of the largest body of water on the Earth?

- A. Atlantic Ocean B. Gulf of Mexico C. Lake Jackson D. Pacific Ocean
E. NOTA**